

DIRECTIONS

Evaluate the student by checking the appropriate box to indicate the degree of Competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:

- 0 No exposure**
- 1 Introduced-** the student has been exposed through non-participatory instruction (e.g. lecture, demonstration, field trip, video).
- 2 Practiced-** the student can perform the task with direct supervision.
- 3 Entry-Level Competency-** the student can perform the task with limited supervision and/or does not perform the task to standard (a typical entry-level performance expectation).
- 4 Competency-** the student consistently performs task to standard with no supervision (on at least two occasions or at instructor's option).

DIESEL TRUCK MECHANIC 47.0605

GENERAL SKILLS

0 1 2 3 4

A. Practice Work Place Safety

*A. 001 Define specific safety terms.

*A.002 Demonstrate the use of proper clothing, safety glasses, aprons, shield, and other safety equipment.

*A.003 Demonstrate knowledge of appropriate fire safety practices.

*A.004 Demonstrate knowledge of appropriate first aid procedures.

*A.005 Demonstrate knowledge of hazardous waste handling procedures, being aware of the "Right to Know" regulations.

*A.006 Prepare a list of shop safety rules for a truck, bus, and heavy equipment repair shop.

B. Maintain Tools and Equipment

B.001 Identify and use all hand tools () listed in the appendix (local AVC developed).

B.002 Identify and use all repair equipment () listed in the appendix (local AVC developed).

*B.003 Follow tool and equipment manufacturer's maintenance schedule.

C. Apply Technical Reading Skills

*C.001 Read and interpret manufacturer's manuals and service bulletins.

D. Perform Preventive Maintenance and Appearance Maintenance

*D.001 Determine the required preventive maintenance for a truck, bus, or other heavy equipment, according to manufacturer's specifications.

*D.002 Perform preventive maintenance on truck, bus, or other heavy equipment, according to manufacturer's specifications.

*D.003 Demonstrate proper lubrication techniques.

*D.004 Demonstrate knowledge of the importance of properly maintained fuel filters/water separators in diesel fuel systems.

*D.005 Identify the tools used to clean and wash a vehicle.

*D.006 List and follow proper procedures for washing a vehicle.

*D.007 List and follow proper procedures for cleaning of a vehicle (interior/exterior).

E. Perform Vehicle State Inspection

*E.001 Follow the specifications of the State Inspection Manual.

*E.002 Prepare a report of vehicle defects found while inspecting a truck.

*E.003 Prepare a report of vehicle defects found while inspecting a bus.

F. Perform Basic Mathematics and Measurements

*F.001 Perform basic computations with whole numbers, fractions, and/or decimals (addition, subtraction, division and multiplication) involved in repair shop operations.

*F.002 use both metric and English measuring tools.

*F.003 Perform technical applications of mathematical concepts in the use of truck, bus, and heavy equipment repair equipment/instruments.

G. Perform Parts Department Operations

*G.001 Locate and list all necessary vehicle information relative to the replacement of any part.

*G.002 Use proper telephone procedures when calling jobbers to request availability and cost information concerning specific parts.

*G.003 Use an appropriate indexing system to locate the proper parts catalog for a specific job.

*G.004 Use a catalog index to locate the correct part description, number, and diagram (if available) for a part to be used in a specific repair job.

H. Maintain Wheels and Tires

*H.001 Remove and replace a wheel (spoke and bud types), tightening the lug nuts in the proper sequence and to the proper torque (checking for runout).

*H.002 Demonstrate knowledge of tire construction specifications.

*H.003 Diagnose normal and abnormal tire condition, identifying the probable cause of the condition.

*H.004 Static balance a tire.

*H.005 Spin balance a tire.

*H.006 Repair a tire and/or tube, following general safety practices.

I. Apply Alignment Procedures

*I.001 Demonstrate knowledge of steering and suspension part terminology.

*I.002 (SEE H.003)

*I.003 Check alignment settings and make adjustments to meet manufacturer's specifications.

J. Maintain Suspension and Steering

- *J.001 Identify all common suspension and steering parts.
- *J.002 Test steering linkage for free play, testing for worn parts and replacing them.
- *J.003 Rebuild and set a steering gear assembly (manual and/or power).
- *J.004 Test pressures in power steering pumps.
- *J.005 Check suspension, replacing any worn or damaged parts.

K. Maintain Brakes

- *K.001 Demonstrate understanding of brake system operation (disc, air, hydraulic, air/hydraulic...).
- *K.002 Inspect brake system and list parts or further work needed to be completed.
- *K.003 Adjust and/or service parking brakes.
- *K.004 Replace brake shoes, pads, lines, and hoses.
- *K.005 Bleed a brake system.
- *K.006 Resurface brake drums and rotors.
- *K.007 Replace and/or rebuild any hydraulic components.
- *K.008 Demonstrate knowledge of brake proportioning system and/or four wheel braking systems.

L. Understand Internal Combustion Engine Operation

- *L.001 Demonstrate understanding of the theory of the internal combustion engine.
- *L.002 Identify the common types of engines found in trucks.
- *L.003 Verify the need for engine repair based on the symptoms stated in the customer's complaint about vehicle performance.
- *L.004 Troubleshoot engine problems.

M. Understand Exhausts and Engine Emissions

- *M.001 Diagnose an exhaust problem and repair or replace necessary exhaust system components through visual inspection and engine analysis.
- *M.002 Demonstrate knowledge of the theory of emission control systems, identifying components (PCV, EGR,...).
- *M.003 Trace pollutants through the emission control systems.
- *M.004 Diagnose and repair individual manufacturer's emission control system components to the manufacturer's standards.

N. Understand Fuel and Fuel systems (Gasoline/Diesel)

- *N.001 Locate and identify the major components of gasoline fuel systems and trace fuel and air flow through systems.
- *N.002 Locate and identify the major components of diesel fuel systems and trace fuel and air flow through systems.
- *N.003 Test and replace major components of carbureted fuel systems, using manufacturer's procedures and specifications.
- *N.004 Identify the components of the major fuel injection systems.
- *N.005 Demonstrate knowledge of the components and operation of super-chargers.
- *N.006 Demonstrate knowledge of types of fuels and their applications.
- *N.007 Identify the circuits of a carburetor and describe the function of each circuit.
- *N.008 Perform all internal and external adjustments on a carburetor, using manufacturer's procedures and specifications.
- *N.009 Diagnose and repair fuel injection problems.
- *N.010 Identify governor types and state their operating principles.
- *N.011 Remove, repair or replace, and adjust governors.

O. Understand Heating, Cooling, and Air Conditioning Systems

- *O.001 Demonstrate knowledge of the theories of engine cooling systems (air and liquid).
- *O.002 Test radiator cap and cooling system for proper pressure and/or leaks.
- *O.003 Remove, test, and replace thermostat.
- *O.004 Drain and reverse flush radiator.
- *O.005 Describe the function of a thermostatically-controlled shutter system.
- *O.006 Explain the function of water filters and conditioners in the cooling systems of vehicles.
- *O.007 Diagnose engine overheating problems.
- *O.008 Explain the fundamentals of climate control systems (heating/air conditioning) and the function of controls of the systems.
- *O.009 Service the components of the heating and/or air conditioning system to the manufacturer's specifications.

P. Understand Electrical Systems

- *P.001 Demonstrate knowledge of basic electrical theory (Ohm's law,...).
- *P.002 Solder electrical wires, using the proper flux, equipment, and procedures.
- *P.003 Troubleshoot electrical circuits, using common electrical testing equipment.
- *P.004 Perform basic battery testing and service, to industry standards.
- *P.005 Troubleshoot and repair common electrical circuits and components.
- *P.006 Demonstrate knowledge of the basic theory of cranking circuits and their components.

- *P.007 Demonstrate knowledge of the theory and components of a charging system.
- *P.008 Remove and replace alternator and voltage regulator.
- *P.009 Determine the current of a cranking circuit; remove and replace components as necessary.
- *P.010 Troubleshoot all electrical problems with regard to trailer electrical wiring/plug circuitry systems.
- *P.011 Disassemble, test, and repair the entire cranking system.
- *P.012 Disassemble alternator; test and replace its components; and assemble it to manufacturer's specifications.
- *P.013 Disassemble, test, and repair school bus passenger discharge lighting systems.
- *P.014 Read a wiring diagram to trouble shoot an electrical problem.
- *P.015 Diagnose specific charging system problems.

Q. Service Drive Line, Transmission, and Twin Screw Systems

- *Q.001 Identify the components of the drive line, transmission, two and/or four wheel drive, and twin screw systems of a truck.
- *Q.002 Remove and replace universal joints and/or constant velocity joints.
- *Q.003 Remove, repair, and install a transmission and/or clutch, using the manufacturer's procedures.
- *Q.004 Diagnose and repair common rear differential/front differential problems.
- *Q.005 Service the twin screw system seals, joints, and bearings in accordance with manufacturer's specifications.
- *Q.006 Check and adjust the shift linkage in accordance with manufacturer's specifications.
- *Q.007 Demonstrate knowledge of the theory of an automatic transmission.

R. Apply Engine Rebuilding Skills

- *R.001 Check engine for oil leaks and make necessary repairs.
- *R.002 Diagnose and determine need to disassemble engine through oil analysis and engine measurements/tests.
- *R.003 Remove and replace pistons and rings in accordance with the manufacturer's specifications.
- *R.004 Remove and replace the crankshaft and/or bearings in accordance with the manufacturer's specifications.
- *R.005 Remove, overhaul, and replace the cylinder head and valve train components in accordance with manufacturer's specifications.
- *R.006 Remove and replace the engine assembly.
- *R.007 remove and replace camshaft and/or camshaft bearings in accordance with manufacturer's specifications.

S. Perform Oxy-fuel Welding/Cutting and Shielded Metal Arc Welding Tasks

- *S.001 Set up and leak test the oxy-fuel welding and cutting equipment, following manufacturer's safety procedures.
- *S.002 Identify flames, including fuel-gas in air flame, carburizing flame, neutral flame, and oxidizing flame.
- *S.003 Light and adjust the torch by using the needle valve and the regulators, following manufacturer's safety procedures.
- *S.004 Cut, braze, and gas weld specific types of metal.
- *S.005 Demonstrate knowledge of shielded metal arc welding safety practices, including arc light radiation, burn prevention, and general shop care.
- *S.006 Identify parts of flames, including outer cone, feather, and inner cone.
- *S.007 Demonstrate knowledge of wire feed/MIG welding procedures.

T. Demonstrate Vehicle Operation Skills

- *T.001 Identify government agencies regulating the operation of vehicles.
- *T.002 Be able to read and interpret the DOT regulations on vehicle driving.
- *T.003 Demonstrate ability to prepare and maintain a log book to government specifications (ICC log book).
- *T.004 Perform equipment inspection, following a prepared checklist.
- *T.005 Understand the operation of vehicle systems: braking, electrical, drive train, and engine.
- *T.006 Demonstrate the proper procedure to start and stop the engine.
- *T.007 Demonstrate proper gear shifting technique.
- *T.008 Demonstrate proper steering and turning techniques.
- *T.009 Engage and disengage trailers.
- *T.010 Load and unload vehicles properly.
- *T.011 Secure loads properly.
- *T.012 Demonstrate knowledge of accident prevention and tire care procedures.
- *T.013 Perform six hours of behind-the-wheel driving, including hook up, drop, pre-trip inspection, and driving course/yard maneuvers.

U. Apply Business Management Skills

- *U.001 Demonstrate knowledge of and procedures for invoices and repair orders.
- *U.002 Estimate the cost of parts/labor for a scheduled job.
- *U.003 Keep business records in ledgers or journals.
- *U.004 Demonstrate knowledge of computer record keeping system.
- *U.005 Demonstrate knowledge of vehicle selection for a specific job.

V. Apply Positive Work Attitude

*V.001 Demonstrate dependability as a worker.

*V.002 Demonstrate initiative in planning and performing work accurately, neatly, and creatively.

*V.003 Demonstrate self-control and adaptability when some planned activity must be changed.

*V.004 Cooperate with customers, co-workers, and supervisors.

*V.005 Communicate effectively both orally and in writing.

*V.006 Perform as a safe, self-disciplined worker.

*V.007 Keep work station neat and clean.